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**Available Data from the 1986
King Mackerel Economic
Costs and Returns Study**

by:

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June 1989

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U.S. Department of Commerce
Robert Mosbacher, Secretary

National Oceanic and Atmospheric Administration
William E. Evans, Administrator

National Marine Fisheries Service
James W. Brennan, Assistant Administrator for Fisheries

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Introduction

The purpose of this memorandum is to inform interested parties of the existence of cost and revenue data for vessels which operated in the Southeast coast of the United States (South Atlantic) king mackerel fishery in 1986. The data was collected by the Economic and Statistics Office (ESO) of the Southeast Fisheries Center, National Marine Fisheries Service (NMFS) and assembled and analyzed by the Economics Unit of the Southeast Regional Office, NMFS. This effort was in response to the Gulf of Mexico and South Atlantic Fishery Management Councils' need for pertinent economic information on the impact of fisheries management decisions on king mackerel fishermen.

Both the South Atlantic and the Gulf of Mexico king mackerel fisheries have been operating under a fishery management plan (FMP) for coastal pelagic resources which was approved in 1982 and implemented in February, 1983 under the direction of the Gulf of Mexico and South Atlantic fishery councils (GMFMC and SAFMC). The original plan, which treated king and Spanish mackerel as separate stocks, made both recreational and commercial allocations. Commercial allocations were further split between net and hook-and-line fishermen. The FMP has been amended twice. The first amendment recognized the existence of separate Gulf and Atlantic migratory groups and established fishing permits and bag limits for king mackerel while the second amendment required charterboats to obtain permits and prohibited the use of purse seines for the Gulf migratory group of king mackerel. A third amendment prohibiting the use of purse seines and run-around gill nets for the Atlantic migratory group and the use of drift gill nets for both groups is currently under review.

Data Acquisition and Assembly

Port agents of the NMFS located on the South Atlantic coast were given the task of enumerating the survey (Appendix 1) for the ESO. Only vessels that had applied for king mackerel permits in 1986 were included in the survey. The data were entered into a computer file by the Economics Unit of the Southeast Regional Office using RBase and were subsequently changed to a SAS file for assembly and analysis.

The available data set was assembled from forty-eight usable surveys. A usable survey was defined as one which 1) included landings of king mackerel in 1986, 2) included specific landings data for other species landed, i.e. if the vessel reported landing 10,000 pounds of king mackerel and reported this catch as fifteen percent of total catch without specifying the number or percentage catch of each other species, the survey was not included and 3) included a complete set of cost data. Data that were under scrutiny were verified to the extent possible, and if there were doubts concerning certain data, the survey was omitted from the final data set.

Of the forty-eight vessels, forty-one were considered to be commercial vessels and seven were considered to be primarily charter vessels. The survey yielded eighty

variables that reflected vessel characteristics, effort, catch, and cost. Thirty-four additional variables were created using SAS . These variables contain revenue information for the vessels identified as commercial and cost information on both a daily and trip basis for all vessels. Definitions and positions of all variables contained in the SAS data set appear in appendix 2.

All data are considered to be available for public use with the exception of vessel name and home port. Therefore, the variables VES_NAME and HOMEPORT will appear as a missing value for each observation. A sample analysis of the data for commercial gill net and hook-and-line fishermen may be found in appendix 3.

To obtain a copy of the data set, please send a letter requesting the 1986 port agent survey for king mackerel vessels and a two-sided high-density floppy disk to Myles Raizin, National Fisheries Marine Service, Duval Building, 9450 Koger Blvd., St. Petersburg, FL 33702. Please indicate the format in which you want the data set to be written. Available formats include ASCII, DIF, DBase, and SAS.

Appendix 1

You were granted a commercial king mackerel fishing permit for the vessel. according to the application the length of the vessel is _____ feet and the hold capacity is _____ tons, is this information correct ____ (Y/N)?

Do you own and operate this vessel __ (Y/N)?

Do you charter your vessel for recreational fishing____(Y/N)?

Vessel characteristics

The hull construction of the vessel is _____

The horsepower of the engine is _____

Vessel age ____ or Year built _____

How long (years) have you operated this vessel ____

Does the vessel have the standard equipment? _ (Y/N)
(standard equipment is Loran, VHF, fish finder and ice storage)

Other equipment _____, _____

Effort

List the ports that the vessel unload at and how many trips were made at each port during 1986 (Confirm the home port from permit)

Homeport _____ Trips ____

Other _____ Trips ____

Other _____ Trips ____

Other _____ Trips ____

Estimate the usual length (in fractions of days) of a commercial (i.e., non-charter) fishing trips

_____. ____

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List the types and amount of gear used during 1986 (e.g., troll lines and number of lines, gill nets and size of net, surface longline and number of hooks, also include charters and number of lines, etc.)

Gear Type 1 _____ Amount ____

Gear Type 2 _____ Amount ____

Gear Type 3 _____ Amount ____

Gear Type 4 _____ Amount ____

Estimate the number of fishing trips made with each of the above gears?

Gear Type 1 ____; Gear Type 2 ____;

Gear Type 3 ____; Gear Type 4 ____;

Estimate the most common number of crew that were employed on the vessel during 1986? ____

Did this number vary with the type of gear you used? ____ (Y/N)

What were the number of crew for the different types of gear?

Gear Type 1 _____ crew ____

Gear Type 2 _____ crew ____

Gear Type 3 _____ crew ____

Gear Type 4 _____ crew ____

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Does trip length vary with different types of gear? (Y/N)

If it does, estimate differences by gear type:

Gear Type 1 _____ length _____

Gear Type 2 _____ length _____

Gear Type 3 _____ length _____

Gear Type 4 _____ length _____

Costs (annual estimates for calendar year 1986)

Insurance costs _____

License fees _____

Loan payments _____

Other fixed costs _____

Unloading costs _____

Fuel/oil costs _____

Gallons _____

Ice costs _____

Groceries _____

Bait costs _____

Crew wages _____

Vessel/gear repairs _____

Other operating costs _____

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Catch (pounds/revenue)

Estimate the commercial (non-charter) catch and value for the major species during 1986:

| | Species | Est. pounds | total catch | Est. value |
|----|---------|-------------|-------------|------------|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | Others | | | |

If you could not fish for king or Spanish mackerel, would you increase your fishing effort for species that you already catch? _ (Y/N)

If no, what species would you begin to fish for? _____

Would this change require the purchase of new (different) gear? _ (Y/N)

If the vessel was chartered for recreational fishing trips, what percentage of the vessel's 1986 income came from charter fees?

___%

Before quotas were placed on king mackerel in 1984, what percentage of the vessel's annual catch (i.e., pounds) came from king and Spanish?

king ___ % Spanish ___ %

Appendix 2

CONTENTS PROCEDURE

| # | Variable | Type | Len | Pos | Format | Label |
|----|----------|------|-----|-----|--------|--|
| 1 | VES_NAME | Char | 20 | 4 | 20. | VESSEL NAME |
| 2 | VES_LENG | Num | 8 | 24 | | VESSEL LENGTH |
| 3 | VES_TONS | Num | 8 | 32 | | HOLDING CAPACITY IN TONS |
| 4 | OWN_OP | Char | 20 | 40 | 20. | OWNER OPERATOR? (Y/N) |
| 5 | CHARTER | Char | 20 | 60 | 20. | CHARTER VESSEL? (Y/N) |
| 6 | HULL_CON | Num | 8 | 80 | | HULL MATERIAL |
| 7 | HORSES | Num | 8 | 88 | | HORSEPOWER OF ENGINE(S) |
| 8 | TYPE | Char | 20 | 96 | 20. | TYPE OF ENGINE(S) |
| 9 | VES_AGE | Num | 8 | 116 | | VESSEL AGE |
| 10 | AGE_OWN | Num | 8 | 124 | | YEARS OWNED |
| 11 | STD_EQUI | Char | 20 | 132 | 20. | EQUIPMENT (LORAN, VHF, FISHFINDER)? (Y/N) |
| 12 | OTH_EQUI | Char | 20 | 152 | 20. | ADDITIONAL EQUIPMENT |
| 13 | OTH_EQ2 | Char | 20 | 172 | 20. | MORE EQUIPMENT |
| 14 | HOMEPORT | Num | 8 | 192 | | HOMEPORT |
| 15 | HP_ST | Num | 8 | 200 | | STATE HOMEPORT LOCATED |
| 16 | TRPS_HP | Num | 8 | 208 | | NUMBER TRIPS FROM HOMEPORT |
| 17 | OTH_PORT | Num | 8 | 216 | | OTHER PORT |
| 18 | OTH_ST1 | Num | 8 | 224 | | STATE OTHER PORT LOCATED |
| 19 | TRPS_OTH | Num | 8 | 232 | | TRIPS FROM OTHER PORT |
| 20 | OTH_PRT2 | Num | 8 | 240 | | THIRD PORT |
| 21 | OTH_ST2 | Num | 8 | 248 | | THIRD STATE |
| 22 | TRPS_OT2 | Num | 8 | 256 | | TRIPS FROM THIRD PORT |
| 23 | OTH_PRT3 | Num | 8 | 264 | | FOURTH PORT |
| 24 | OTH_ST3 | Num | 8 | 272 | | FOURTH STATE |
| 25 | TRPS_OT3 | Num | 8 | 280 | | TRIPS FROM FOURTH PORT |
| 26 | TRPS_DAY | Num | 8 | 288 | | LENGTH OF TRIP IN DAYS |
| 27 | GEAR1 | Num | 8 | 296 | | PRIMARY GEAR |
| 28 | AMT_GEAR | Num | 8 | 304 | | AMOUNT OF PRIMARY GEAR |
| 29 | GEAR2 | Num | 8 | 312 | | SECONDARY GEAR |
| 30 | AMT_GR2 | Num | 8 | 320 | | AMOUNT OF SECONDARY GEAR |
| 31 | GEAR3 | Num | 8 | 328 | | TERTIARY GEAR |
| 32 | AMT_GR3 | Num | 8 | 336 | | AMOUNT OF TERTIARY GEAR |
| 33 | TRPS_GR | Num | 8 | 344 | | TRIPS WITH PRIMARY GEAR |
| 34 | TRPS_GR2 | Num | 8 | 352 | | TRIPS WITH SECONDARY GEAR |
| 35 | TRPS_GR3 | Num | 8 | 360 | | TRIPS WITH TERTIARY GEAR |
| 36 | CREW | Num | 8 | 368 | | NUMBER OF CREW |
| 37 | VARY_TRP | Char | 20 | 376 | 20. | DOES TRIP LENGTH VARY WITH GEAR TYPE? |
| 38 | CREW_G1 | Num | 8 | 396 | | CREWSIZE WITH PRIMARY GEAR |
| 39 | CREW_G2 | Num | 8 | 404 | | CREWSIZE WITH SECONDARY GEAR |
| 40 | CREW_G3 | Num | 8 | 412 | | CREWSIZE WITH TERTIARY GEAR |

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| | | | | | | |
|----|----------|------|----|-----|-----|--|
| 41 | VARY_CRE | Char | 20 | 420 | 20. | DOES CREWSIZE VARY WITH GEAR? |
| 42 | VARY_G1 | Num | 8 | 440 | | TRIP LENGTH WITH PRIMARY GEAR |
| 43 | VARY_G2 | Num | 8 | 448 | | TRIP LENGTH WITH SECONDARY GEAR |
| 44 | VARY_G3 | Num | 8 | 456 | | TRIP LENGTH WITH TERTIARY GEAR |
| 45 | INS | Num | 8 | 464 | | ANNUAL COST OF INSURANCE |
| 46 | LICEN | Num | 8 | 472 | | ANNUAL COST OF LICENSE |
| 47 | LOAN | Num | 8 | 480 | | ANNUAL LOAN PAYMENTS |
| 48 | OTH_FIX | Num | 8 | 488 | | OTHER ANNUAL FIXED COSTS |
| 49 | OTHCOM | Char | 20 | 496 | 20. | TYPE OF OTHER FIXED COSTS |
| 50 | UNLOAD | Num | 8 | 516 | | ANNUAL COST OF UNLOADING |
| 51 | LOADCOM | Char | 20 | 524 | 20. | TYPE OF UNLOADING COSTS |
| 52 | FUEL_COS | Num | 8 | 544 | | ANNUAL COST OF FUEL |
| 53 | FUEL_GAL | Num | 8 | 552 | | ANNUAL QUANTITY OF FUEL |
| 54 | FUELCOM | Char | 20 | 560 | 20. | TYPE OF FUEL |
| 55 | ICE | Num | 8 | 580 | | ANNUAL COST OF ICE |
| 56 | GROC | Num | 8 | 588 | | ANNUAL COST OF GROCERIES |
| 57 | BAIT | Num | 8 | 596 | | ANNUAL COST OF BAIT |
| 58 | BAITCOM | Char | 20 | 604 | 20. | TYPES OF BAIT |
| 59 | CREW_PER | Num | 8 | 624 | | ANNUAL CREW WAGES |
| 60 | GEAR_REP | Num | 8 | 632 | | COST OF GEAR REPLACEMENT |
| 61 | OTH_OP | Num | 8 | 640 | | OTHER OPERATING EXPENSES |
| 62 | OTOPCOM | Char | 20 | 648 | 20. | TYPES OF OTHER OPERATING EXPENSES |
| 63 | SP1 | Num | 8 | 668 | | PRIMARY SPECIES |
| 64 | SP1_LBS | Num | 8 | 676 | | LANDINGS IN POUNDS OF PRIMARY SPECIES |
| 65 | SP2 | Num | 8 | 684 | | SECOND SPECIES |
| 66 | SP2_LBS | Num | 8 | 692 | | LANDINGS IN POUNDS OF SECOND SPECIES |
| 67 | SP3 | Num | 8 | 700 | | THIRD SPECIES |
| 68 | SP3_LBS | Num | 8 | 708 | | LANDINGS IN POUNDS OF THIRD SPECIES |
| 69 | SP4 | Num | 8 | 716 | | FOURTH SPECIES |
| 70 | SP4_LBS | Num | 8 | 724 | | LANDINGS IN POUNDS OF FOURTH SPECIES |
| 71 | SP5 | Num | 8 | 732 | | FIFTH SPECIES |
| 72 | SP5_LBS | Num | 8 | 740 | | LANDINGS IN POUNDS OF FIFTH SPECIES |
| 73 | OTH_SP | Char | 20 | 748 | 20. | IF NO MACKEREL INCREASE OTHER SPECIES? |
| 74 | TYP_OTH | Num | 8 | 768 | | OTHER SPECIES IF NO MACKEREL |
| 75 | GEAR_PUR | Char | 20 | 776 | 20. | NEW GEAR FOR OTHER SPECIES IF NO MACK? |
| 76 | PER_CHAR | Num | 8 | 796 | | PERCENT INCOME OF VESSEL FROM CHARTER |
| 77 | PER_KING | Num | 8 | 804 | | PERCENT CATCH KING MACKEREL BEFORE 1984 |
| 78 | PER_SPAN | Num | 8 | 812 | | PERCENT CATCH SPANISH MACKEREL BEFORE 1984 |
| 79 | COMMENTS | Char | 20 | 820 | 20. | GENERAL COMMENTS |

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| | | | | | |
|-----|----------|------|---|------|--|
| 80 | LENGTH | Num | 8 | 840 | 1=LESS OR EQ 30 FT.2=GREATER THAN 30 FT |
| 81 | FUEL_PER | Num | 8 | 848 | COST PER GALLON OF FUEL |
| 82 | TRIPS | Num | 8 | 856 | NUMBER OF TRIPS PER ANNUM |
| 83 | NET | Char | 1 | 864 | Y=NET N=HOOK AND LINE |
| 84 | REV1 | Num | 8 | 865 | REVENUE FROM PRIMARY SPECIES |
| 85 | REV3 | Num | 8 | 873 | REVENUE FROM THIRD SPECIES |
| 86 | REV2 | Num | 8 | 881 | REVENUE FROM SECONDARY SPECIES |
| 87 | REV4 | Num | 8 | 889 | REVENUE FROM FOURTH SPECIES |
| 88 | REV5 | Num | 8 | 897 | REVENUE FROM FIFTH SPECIES |
| 89 | TR | Num | 8 | 905 | TOTAL REVENUE PER ANNUM |
| 90 | TFC | Num | 8 | 913 | TOTAL FIXED COST PER ANNUM |
| 91 | TVC | Num | 8 | 921 | TOTAL VARIABLE COST PER ANNUM |
| 92 | TC | Num | 8 | 929 | TOTAL COST PER ANNUM |
| 93 | NETREV | Num | 8 | 937 | TOTAL REVENUE MINUS TOTAL COST PER ANNUM |
| 94 | TCTRP | Num | 8 | 945 | TOTAL COST PER TRIP |
| 95 | TRTRP | Num | 8 | 953 | TOTAL REVENUE PER TRIP |
| 96 | REVTRP | Num | 8 | 961 | TOTAL REVENUE MINUS TOTAL COST PER TRIP |
| 97 | TRPFUEL | Num | 8 | 969 | FUEL COST PER TRIP |
| 98 | TRPICE | Num | 8 | 977 | ICE COST PER TRIP |
| 99 | TRPGROC | Num | 8 | 985 | GROCERY COST PER TRIP |
| 100 | TRPBAIT | Num | 8 | 993 | BAIT COST PER TRIP |
| 101 | TRPCREW | Num | 8 | 1001 | CREW COST PER TRIP |
| 102 | TRPGEAR | Num | 8 | 1009 | GEAR COST PER TRIP |
| 103 | TVCTRP | Num | 8 | 1017 | TOTAL VARIABLE COST PER TRIP |
| 104 | DFUEL | Num | 8 | 1025 | FUEL COST PER DAY |
| 105 | DICE | Num | 8 | 1033 | ICE COST PER DAY |
| 106 | DBAIT | Num | 8 | 1041 | BAIT COST PER DAY |
| 107 | DCREW | Num | 8 | 1049 | CREW COST PER DAY |
| 108 | DGROC | Num | 8 | 1057 | GROCERY COST PER DAY |
| 109 | DTVC | Num | 8 | 1065 | TOTAL VARIABLE COST PER DAY |
| 110 | DTC | Num | 8 | 1073 | TOTAL COST PER DAY |
| 111 | DTR | Num | 8 | 1081 | TOTAL REVENUE PER DAY |
| 112 | DREV | Num | 8 | 1089 | TOTAL REVENUE MINUS TOTAL COST PER DAY |
| 113 | DGEAR | Num | 8 | 1097 | GEAR COST PER DAY |

Appendix 3

The following tables were produced to offer a comparison of costs and returns between hook-and-line vessels in the South Atlantic and gill net fishermen in North Carolina who fish for king mackerel on a seasonal basis. The net category does not include vessels from the drift gill net fishery located on the east coast of Florida. An asterisk (*) indicates that the means are significantly different at 90 percent confidence level.

Vessel Characteristics (means)

| | Hook-and-Line | Net | t-Value | F-value |
|----------------------|---------------|-------------|---------|-------------|
| Length | 30.69 ft. | 31.91 ft. | -0.51 | 2.33(29.10) |
| Carrying Capacity | 2.49 tons | 4.75 tons | -1.52 | 1.04(24.8) |
| Age | 11.50 years | 10.27 years | 0.43 | 1.07(29.10) |
| Horsepower of Engine | 219.60 hp | 294.55 hp | -2.09* | 3.67(29.10) |

Annual Fixed Costs (means in 1988 dollars)

| | Hook-and-Line | Net | t-Value | F-Value |
|-------------|---------------|------------|---------|-------------|
| Insurance | \$1,570.70 | \$1,564.27 | 0.01 | 5.31(29.10) |
| Licenses | 80.75 | 144.55 | -1.11 | 4.39(29.10) |
| Loans | 3,693.30 | 4,118.18 | -0.21 | 2.15(29.10) |
| Other | 392.83 | 627.27 | -0.51 | 8.03(29.10) |
| Total | | | | |
| Fixed Costs | 5,737.58 | 6,454.27 | -0.26 | 2.09(29.10) |

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Variable Costs per Trip (means in 1986 dollars)

| | Hook-and-Line | Net | t-Value | F-Value |
|----------------------------------|---------------|--------|---------|-----------------|
| Fuel | \$115.48 | 32.08 | 2.96* | 106.68(29.10) |
| Ice | 22.88 | 0.82 | 2.94* | 409.86(29.10) |
| Groceries | 60.79 | 4.40 | 2.59* | 1,125.03(29.10) |
| Bait | 78.45 | 1.55 | 2.46* | 7,572.84(29.10) |
| Crew Wages | 205.42 | 55.31 | 2.04* | 26.07(29.10) |
| Gear repair and replacement | 218.21 | 18.90 | 2.16* | 723.13(29.10) |
| Total Variable Costs per Trip | 701.28 | 129.97 | 2.45* | 170.91(29.10) |

Trip Characteristics (means)

| | Hook-and-Line | Net | t-Value | F-Value |
|-----------------|---------------|-------------|---------|---------------|
| Trips | 65.77 days | 125.73 days | -2.37* | 2.31(29.10) |
| Length of Trips | 2.82 days | 0.53 days | 2.82* | 241.84(28.10) |

Revenue per Trip (means in 1986 dollars)

| | Hook-and-Line | Net | t-Value | F-Value |
|---------------|---------------|----------|---------|---------------|
| King Mackerel | | | | |
| Pounds | 214 lbs. | 128 lbs. | 1.75* | 3.48(28.10) |
| Value | 226.89 | 135.82 | 1.75* | 3.48(28.10) |
| Total Revenue | \$1,040.60 | \$316.86 | 2.22* | 68.40(29.10) |
| Total Cost | 899.20 | 191.74 | 2.34* | 103.34(29.10) |
| Net Revenue | 141.40 | 125.12 | 0.10 | 9.86(29.10) |